

Summary of ATF operations for the week of March 18-22

reported at ATF Friday Meeting, March 22 2013

- Installation of a new interaction chamber for the UCLA experiment AE50 - [Plasma Wakefields in the Quasi-Nonlinear Regime](#) is close to completion in BL2. We plan starting vacuum pumping on Monday with the intention to run the e-beam for this experiment for this and next weeks.
- Marcus and Misha have a cross-correlator built that allows single-shot measurement of the 10-um radiation pulse generated with the OPA. The measured 370 fs pulse length agrees with the company's (Quntronics) specification (See Attachment) and is attractive for first test of the ATF CO2 laser amplifiers in the ultra-fast regime. Simultaneously they achieved improved spectral tuning of the OPA output and the beam profile and divergence characterization. For the next week, they should continue with attempts for better matching the OPA spectrum to the 10.2-um amplification branch of the CO2 amplifier and beam telescoping to provide an effective coupling into the regenerative amplifier cavity. This work will be interrupted for the 1st week of April when Quantronics field service specialists will be at ATF to introduce scheduled improvements to both Ti-Sapph systems (for photocathode and 10-um seed). Seeding a fs pulse into the regen is planned for the 2nd week of April.
- Igor finished working on double-pulse CO2 regime to the condition that this is usable for initial ion acceleration tests in this new regime. Ion acceleration experiment will commence yearly next week.
- Olivier presented detailed optimization of the ion acceleration regime upon the plasma profile. Up to 10 MeV acceleration is predicted for the laser parameter $a_0=1.1$, which is close to achievable at the present CO2 laser condition.

Appendix

370 fs 10-um pulse measured with a cross-correlator intersecting it with a T:sapph 0.8-um pulse inside a nonlinear crystal and observing summ-frequency signal.

